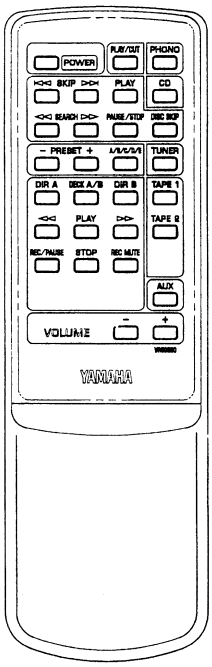
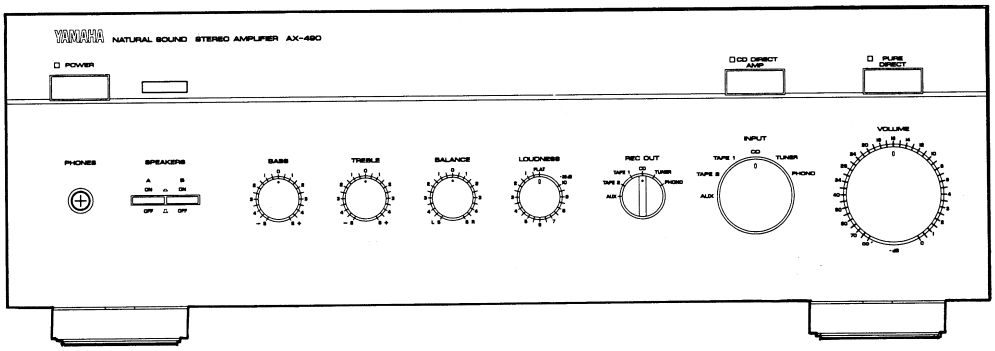
STEREO INTEGRATED AMPLIFIER

AX-490

SERVICE MANUAL





AX-490

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel.
It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products.
Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

■ CONTENTS

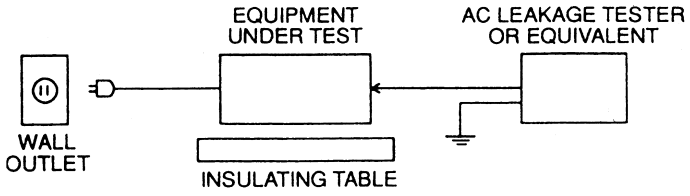
100515

YAMAHA
YAMAHA CORPORATION
P.O.Box1,Hamamatsu,Japan
3.3K-791 Printed in Japan '95.5

■ TO SERVICE PERSONNEL

1. Critical Components Information.
   Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120 V Model Only).
   When service has been completed. It is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohms shunted by 0.15 μF.
- Leakage current must not exceed 0.5 mA.
- Be sure to test for leakage with the AC plug in both polarities.



■ WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

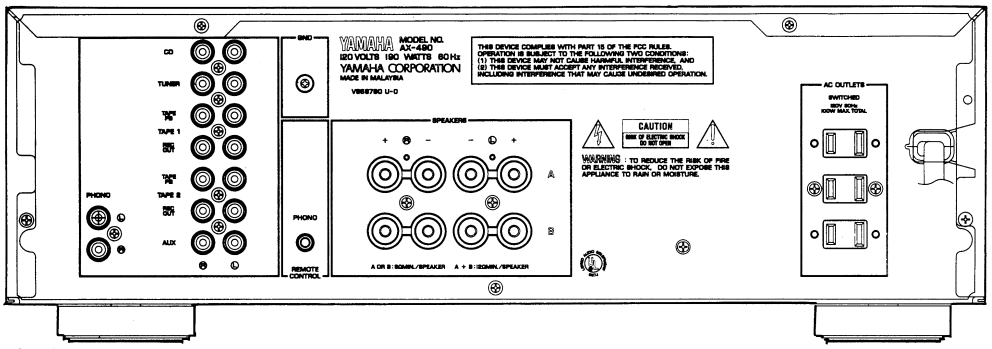
DO NOT PLACE SOLDER, ELECTRICAL/ ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

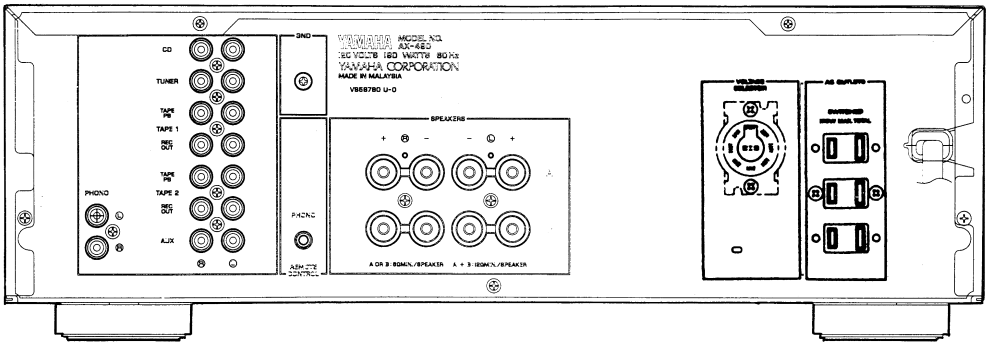
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

■ REAR PANELS

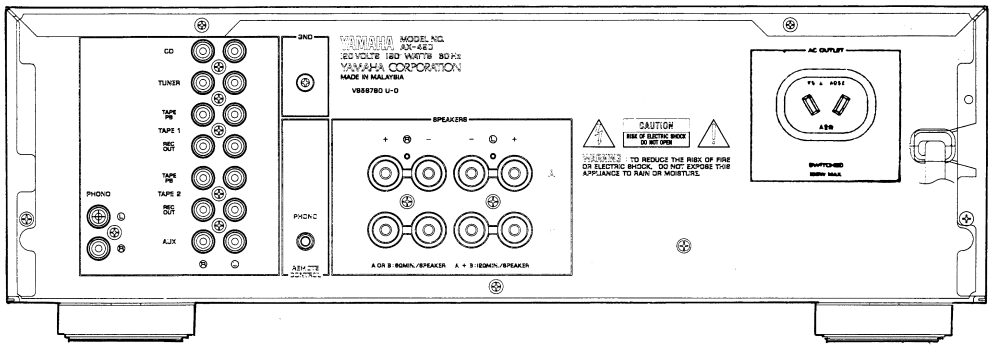
● U, C models



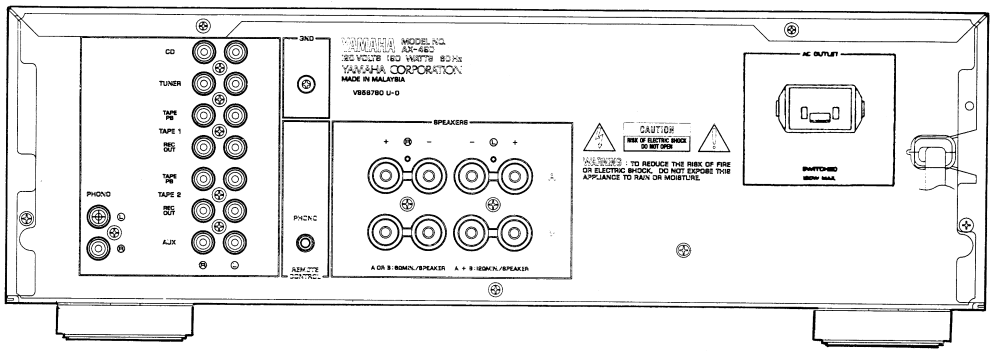
● R model



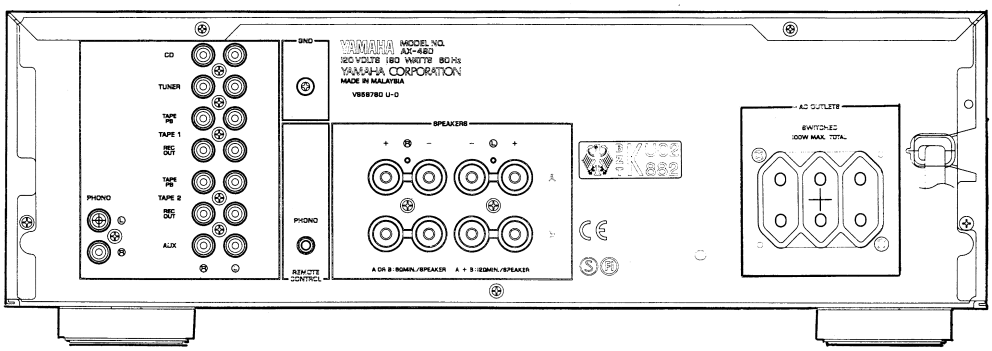
● A model



● B model



● G model



AX-490

■ SPECIFICATIONS

■ AUDIO SECTION

Minimum RMS Output Power per Channel
8Ω, 20Hz to 20kHz, 0.019% THD 85W
6Ω, 20Hz to 20kHz, 0.038% THD 100W

Dynamic Power per Channel (IHF)
8/6/4/2Ω 130/150/185/220W

DIN Standard Output Power per Channel (G model)
1kHz, 0.7% THD, 4Ω 120W

IEC Power (G model)
1kHz, 0.019% THD, 8Ω 100W

Power Band Width
8Ω, 42.5W, 0.038% THD ..... 10Hz to 50kHz

Damping Factor (U, C, A, B, G models)
8Ω, 20Hz to 20kHz ..... 240 or more

Damping Factor (DIN)
8Ω, 40Hz to 12.5kHz ..... 120 or more

EIAJ Maximum Power (R model)
1kHz, 10% THD, 8Ω 130W
1kHz, 10% THD, 6Ω 150W

Input Sensitivity/Impedance
PHONO MM 2.5mV/47kΩ
CD etc. 150mV/47kΩ

Maximum Input Signal Level (1kHz, 0.003% THD)
PHONO MM 115mV

Output Level/Impedance
REC OUT 150mV/470Ω

Headphone Jack Rated Output/Impedance
0.019% THD, RL = 8Ω 0.3V/680Ω

Frequency Response (20Hz to 20kHz)
CD etc. ..... 0±0.5dB

RIAA Equalization Deviation (20Hz to 20kHz)
PHONO MM ..... 0±0.3dB

Total Harmonic Distortion (20Hz to 20kHz)
PHONO MM to REC OUT (3V) 0.003%
CD etc. to SP OUT (42.5W/8Ω) 0.008%

Intermodulation Distortion (8Ω)
CD etc. 0.01%

Signal-to-Noise Ratio (IHF-A Network)
PHONO MM (5mV Input Shorted) 88dB
CD DIRECT AMP SW ON (Shorted) 110dB

Residual Noise (IHF-A Network)
CD DIRECT AMP SW ON 35μV
PURE DIRECT SW ON 90μV

Channel Separation
CD etc. (Input 5.1kΩ Terminated) 1kHz/10kHz 65dB/50dB

Tone Control Characteristics
BASS : Boost/cut ..... ±10dB (20Hz)
Turnover Frequency 350Hz
TREBLE : Boost/cut ..... ±10dB (20kHz)
Turnover Frequency 3.5kHz

Continuous Loudness Control ..... –30dB(1kHz)

Gain Tracking Error (0dB to –60dB) 2dB

Remote Control Custom Code 7A

■ GENERAL

Power Supply
U, C models ..... AC 120V, 60Hz
A, B models ..... AC 240V, 50Hz
G model ..... AC 230V, 50Hz
R model ..... AC 110/120/220/240V, 60/50Hz

Power Consumption
U model 190W
C model 250W
A, B, G, R models 210W

AC Outlets
Switched x 3
U, C, G, R models ..... 100W max. (Total)
Switched x 1
A, B models ..... 100W max.

Dimensions (W x H x D) ..... 435 x 146 x 386mm (17-1/8" x 5-3/4" x 15-1/16")

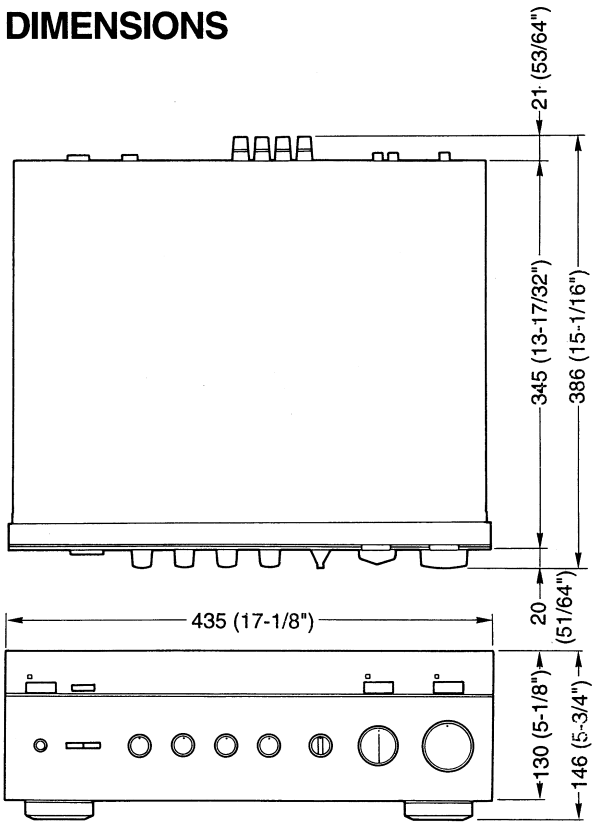
Weight ..... 9.2kg (20 lbs 4 oz)

Accessories ..... Remote Control Transmitter x 1, Battery (size "AA", R06) x 2

* Specifications subject to change without notice.

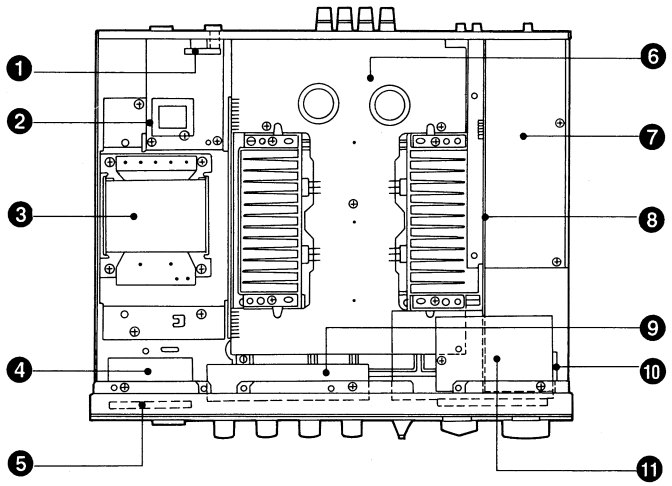
U ..... U.S.A. model ***C ..... Canadian model***
A ..... Australian model ***B ..... British model***
G ..... German model ***R ..... General model***

■ DIMENSIONS



unit: mm (inch)

■ INTERNAL VIEW



❶ MAIN CIRCUIT BOARD (6), (R model)
❷ MAIN CIRCUIT BOARD (2)
❸ POWER TRANSFORMER
❹ FUNCTION CIRCUIT BOARD (7)
❺ FUNCTION CIRCUIT BOARD (8)
❻ MAIN CIRCUIT BOARD (1)
❼ FUNCTION CIRCUIT BOARD (5)
❽ FUNCTION CIRCUIT BOARD (1)
❾ FUNCTION CIRCUIT BOARD (4)
❿ FUNCTION CIRCUIT BOARD (6)
⓫ FUNCTION CIRCUIT BOARD (3)

■ DISASSEMBLY PROCEDURES

(Remove parts in disassembly order as numbered)

1. **Removal of Top Cover**
   Remove 8 screws (① to ③) in Fig. 1, and slide the Top Cover back.

2. **Removal of Front Panel**
   Remove 6 screws (④ and ⑤) in Fig. 2, and pull the Front Panel forward.

3. **Removal of Rear Panel**
   Remove 12 screws (⑥) in Fig. 3.

Precautions for Replacement of Input Selector Switch

Make sure to perform initial setting of the input selector switch after its replacement.

• **How to perform initial setting**
Position the selector switch at the mid-point between the CD position and TUNER position and turn ON the POWER switch. Then the SELECTOR switch turns automatically till it stops at the "CD" position finally.

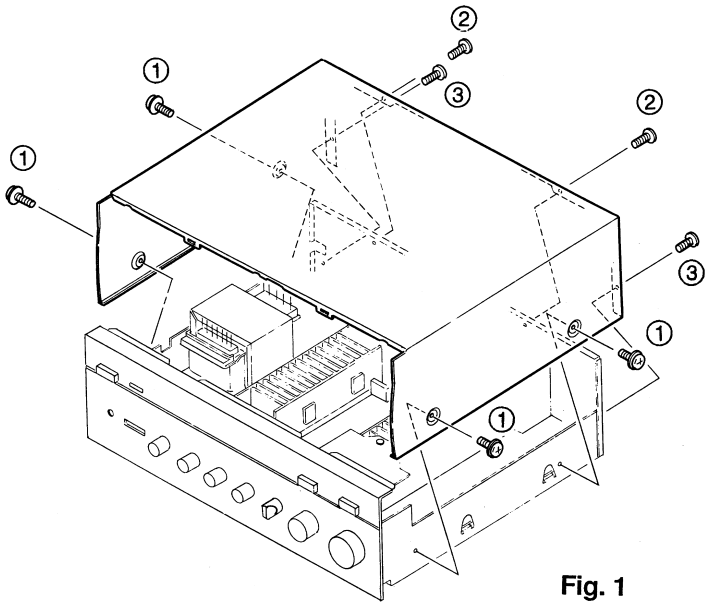


Fig. 1

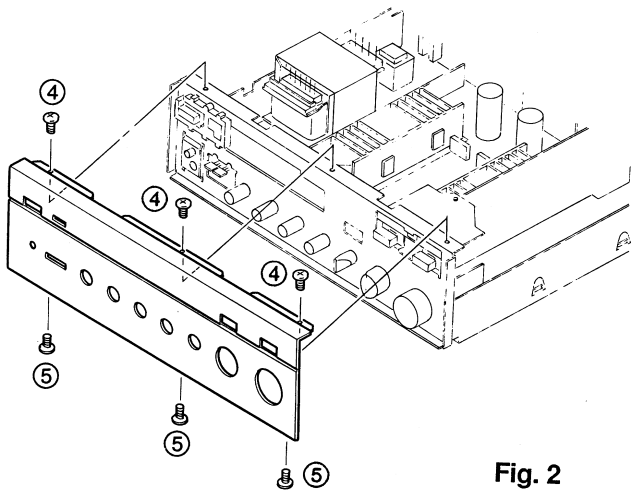


Fig. 2

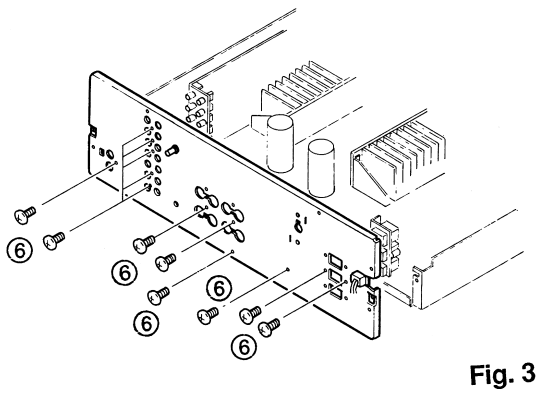


Fig. 3

■ ADJUSTMENTS

1. Before Adjustment

● Make sure that AC line voltage is within:

Models	AC line voltage
U, C	120 V ± 10%
G	230 V ± 10%
A, B	240 V ± 10%
R	110/120/220/240 V ±10 %

2. Instruments required

● AC VM or dual channel AC VM
● DC VM

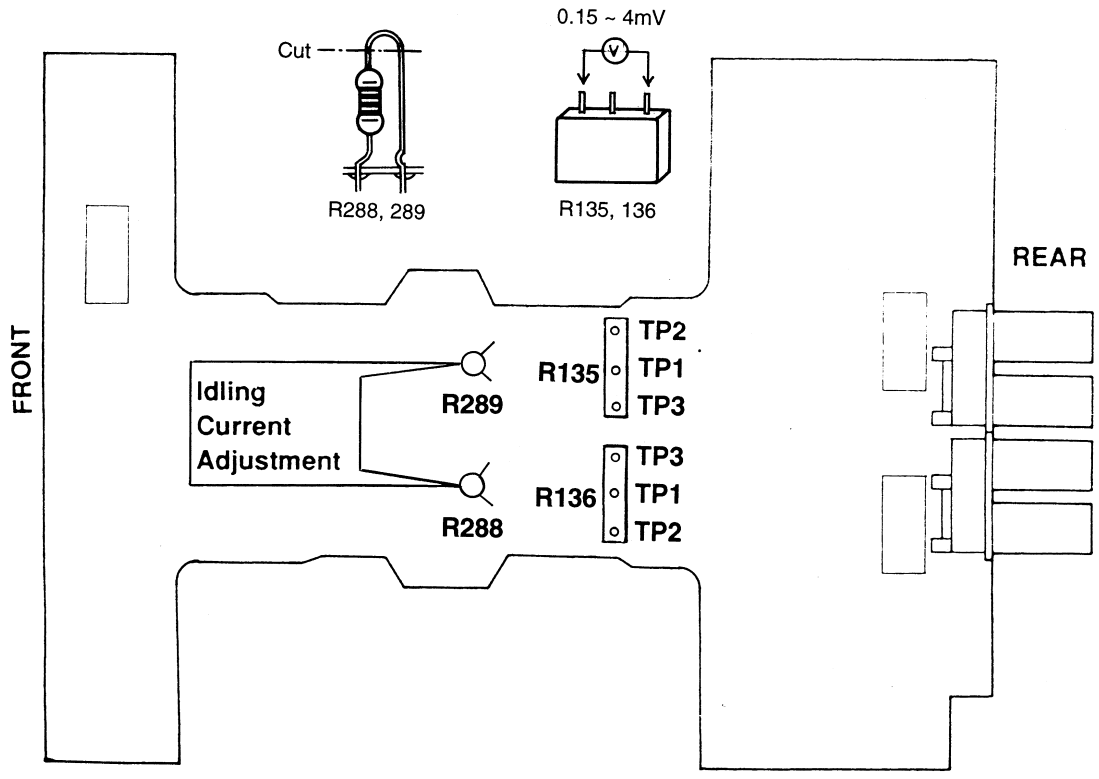
● IDLING CURRENT ADJUSTMENT

- After replacing the power and drive transistors, confirm idling current.
- After the power has been turned on, confirm that the voltage across R135 (Lch), R136 (Rch) is between 0.15 mV to 4 mV.
  If it exceeds 4.1 mV, open (cut off) R135 (Lch) or R136 (Rch) and reconfirm it.
- If R289 (Lch) or R288 (Rch) have been already cut and the idling current does not flow, re-solder the resistor (1kΩ) at R289 (Lch) or R288 (Rch).
- Q117 and Q118 are transistors for temperature correction. Apply silicone grease to the contact surface with the heat sink.

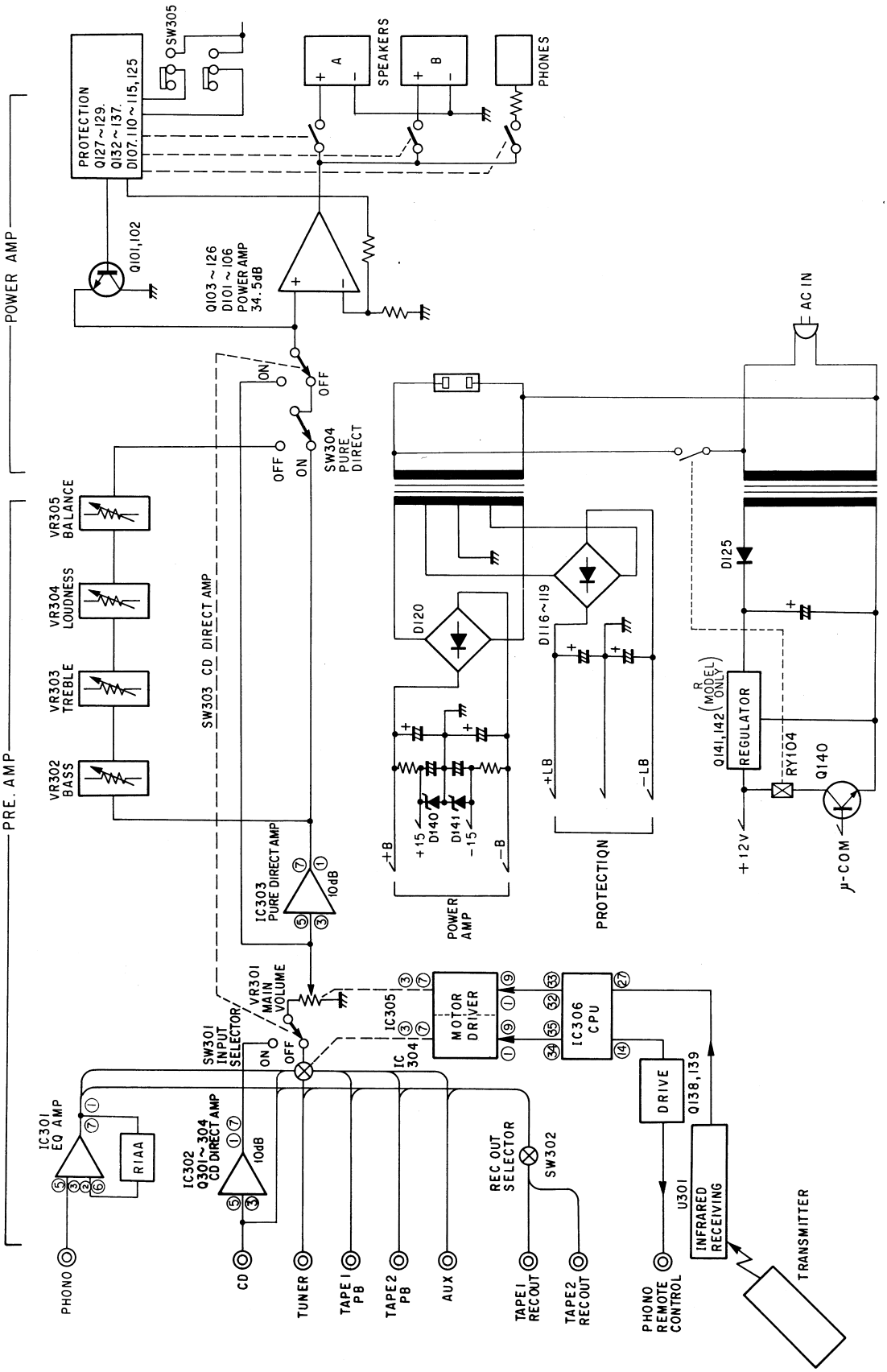
	Test points	Adjustment point	Rating
Lch	Across the terminals of R135 (TP1 and 2 or 1 and 3)	R289	0.15 ~ 4mV
Rch	Across the terminals of R136 (TP1 and 2 or 1 and 3)	R288	0.15 ~ 4mV

● TEST POINTS

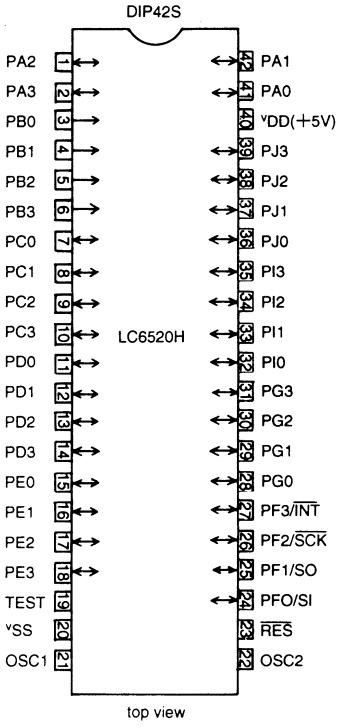
Idling Current Confirmation

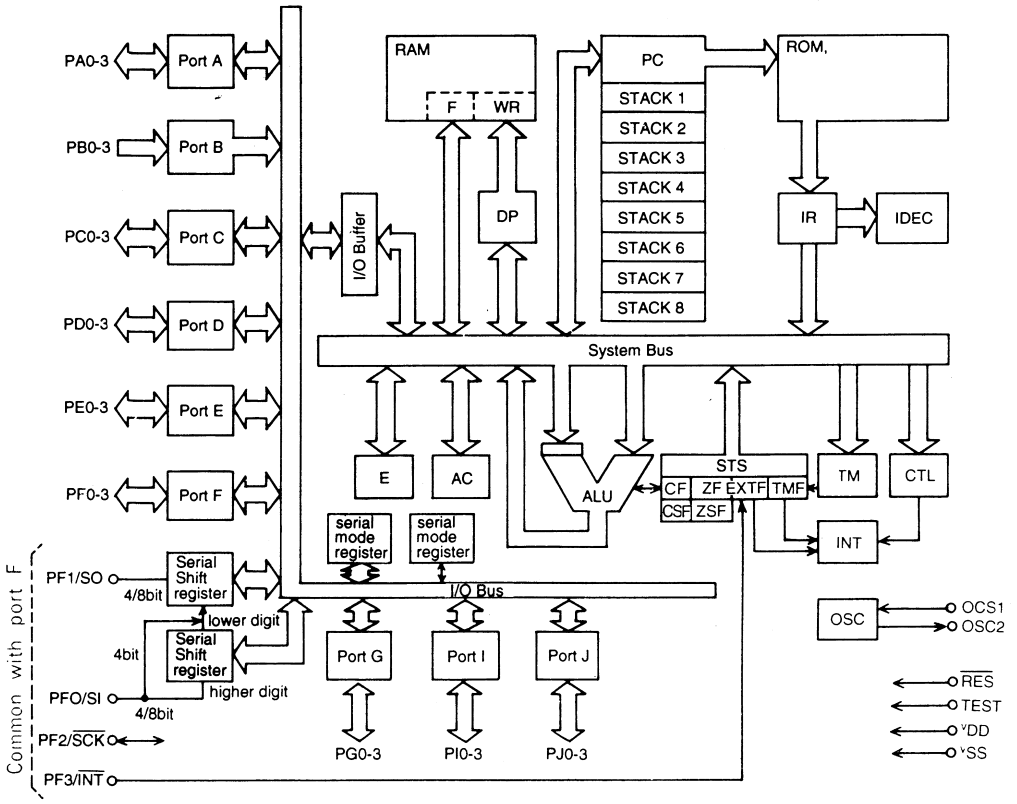


■ BLOCK DIAGRAM



■ μ-COM DATA (IC306: LC6520H - 4B14)

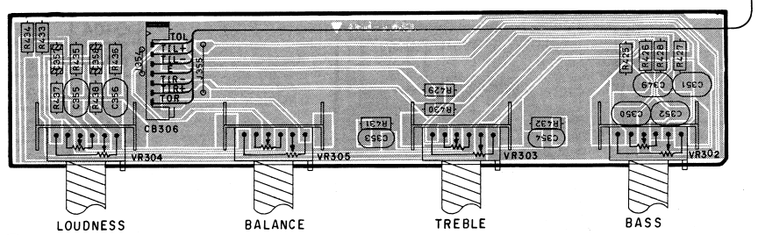




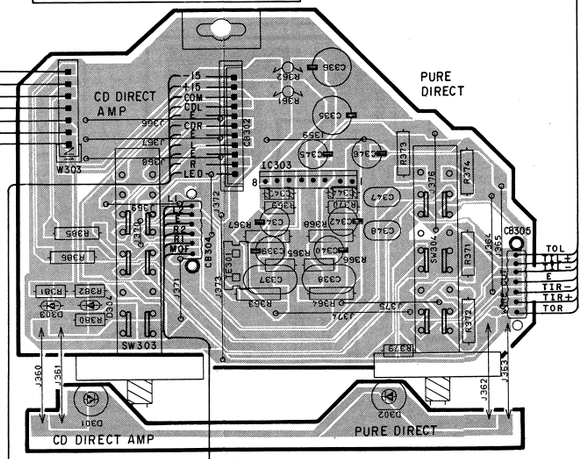
PIN NO.	PIN NAME	I/O	FUNCTION		PIN No.	PORT NAME	I/O	FUNCTION
1	PA2	-			22	OSC2		Crystal Oscillator (4MHz)
2	PA3	I	VDD		23	RES		Reset input
3	PB0	I	Selector position data	PHONO	24	PF0		
4	PB1	I	Selector position data	TUNER	25	PF1	I	GND
5	PB2	I	Selector position data	CD	26	PF2	I	Remote control power on/off H: on
6	PB3	I	Selector position data	TAPE 1	27	PF3	I	Remote control data
7	PC0	I	Selector position data	TAPE 2	28	PG0	I	Power switch data
8	PC1	I	Selector position data	AUX	29	PG1	I	Power control H: on L: off
9	PC2	I	Selector position data		30	PG2	O	Power output H: on
10	PC3	I	GND		31	PG3	O	Stand-by H: on
11	PD0	I	Selector cam position data		32	PI0	O	Volume motor data
12	PD1	I	Selector 6 or 7 Select L: 6		33	PI1	O	Volume motor data
13	PD2	I	Audio mute key data		34	PI2	O	Selector motor data
14	PD3	O	PLAY/CUT(Player control)		35	PI3	O	Selector motor data
15	PE0	I	Power data H: G, model		36	PJ0	I	
16	PE1	I	Power down data		37	PJ1	O	
17	PE2				38	PJ2	O	
18	PE3	I	GND		39	PJ3	O	Muting control H: on
19	TEST		GND		40	VDD		+5V
20	VSS		GND		41	PA0		
21	OSC1		Crystall oscillator (4MHz)		42	PA1		

■ PRINTED CIRCUIT BOARD AX-490

FUNCTION P.C.B (4)



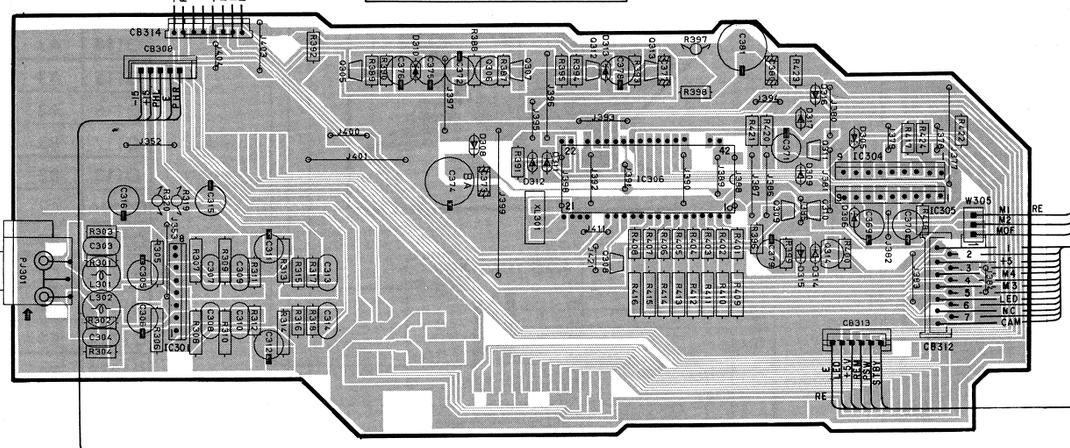
FUNCTION P.C.B (3)



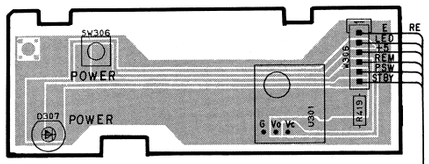
❶ To MAIN (1)

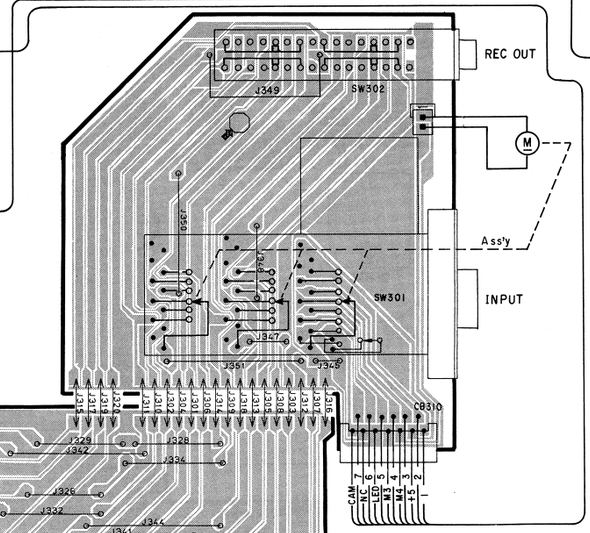
❷ To MAIN (1)

FUNCTION P.C.B (5)

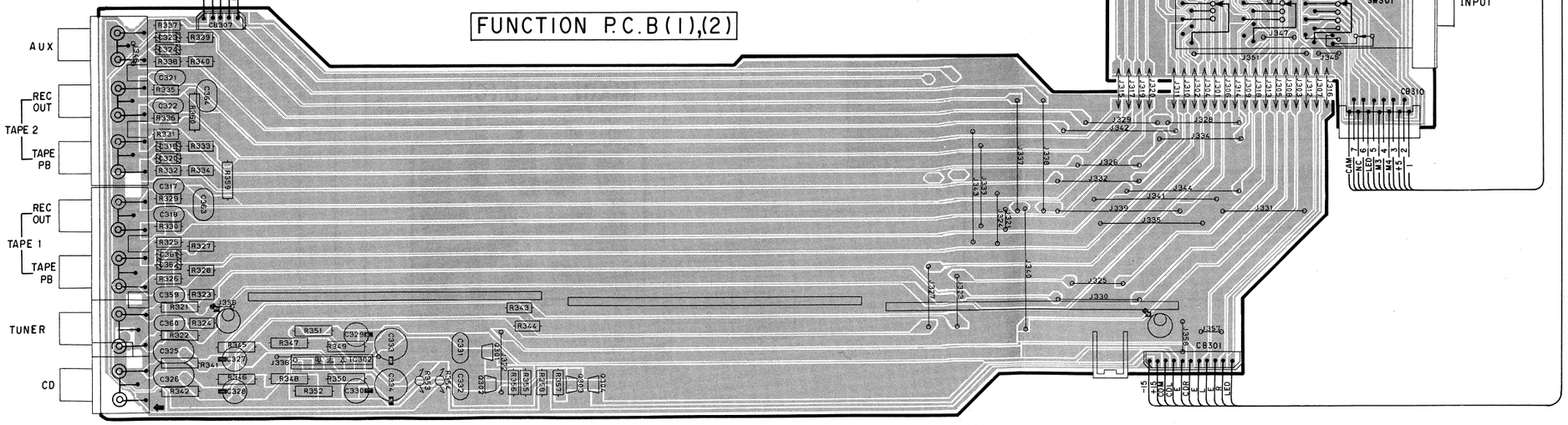


FUNCTION P.C.B (8)

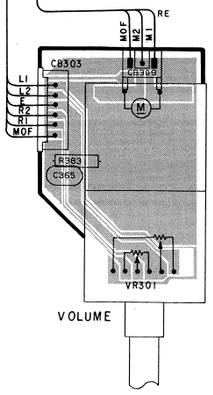




FUNCTION P.C.B (1),(2)



FUNCTION P.C.B (6)

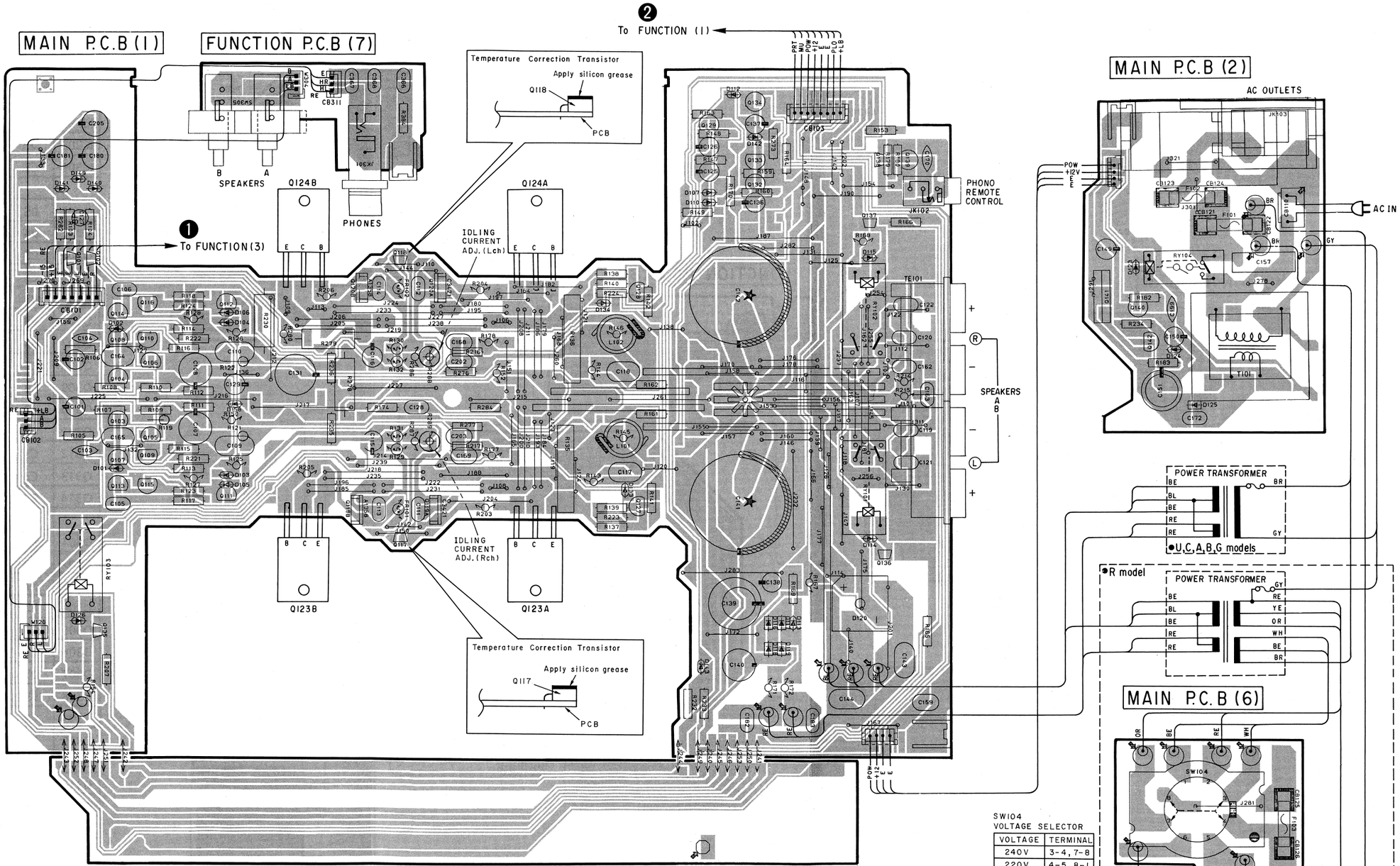


PHONO

● Semiconductors Location

Ref. No.	Location
IC301	A3
IC302	B5
IC303	F2
IC304	D3
IC305	D3
IC306	C3
Q301	B5
Q302	B5
Q303	C5
Q304	C5
Q305	B3
Q306	B3
Q307	B3
Q308	C3
Q309	C3
Q310	C3
Q311	C3
Q312	C3
Q313	C3
Q314	C3
D301	F3
D302	G3
D303	F2
D304	F2
D305	C3
D306	C3
D307	D3
D308	B3
D309	C3
D310	B3
D311	B3
D312	B3
D313	C3
D314	C3
D315	C3
D316	C3
D317	C3

■ PRINTED CIRCUIT BOARD AX-490



SW104
VOLTAGE SELECTOR

VOLTAGE	TERMINAL
240V	3-4, 7-8
220V	4-5, 8-1
120V	2-3, 6-7
110V	1-2, 5-6

● Semiconductors Location

Ref. No.	Location	Ref. No.	Location
Q101	A2	D101	A3
Q102	A2	D102	A3
Q103	A3	D103	B3
Q104	A3	D104	B3
Q105	A3	D105	B3
Q106	A3	D106	B3
Q107	A3	D107	D2
Q108	A3	D110	D2
Q109	A3	D112	D2
Q110	A3	D113	D4
Q111	B3	D114	E3
Q112	B2	D115	E2
Q113	A3	D416	D4
Q114	A3	D117	D4
Q115	A3	D118	D4
Q116	A2	D119	D4
Q117	B3	D120	D4
Q118	B2	D123	F2
Q119A	C3	D124	F3
Q119B	B3	D125	F3
Q120A	C2	D126	A3
Q120B	B2	D133	C3
Q123A	C4	D134	C2
Q123B	B4	D140	A2
Q124A	C2	D141	A2
Q124B	B2	D142	D2
Q127	C3	D143	D4
Q128	C2	D149	A2
Q129	D2	D158	B3
Q132	D2		
Q133	D2		
Q134	D2		
Q135	A4		
Q136	E4		
Q137	E2		
Q138	E2		
Q139	E2		
Q140	F3		
Q141	F2		
Q142	F3		

■ SCHEMATIC DIAGRAM (Function) AX-490

RESISTOR

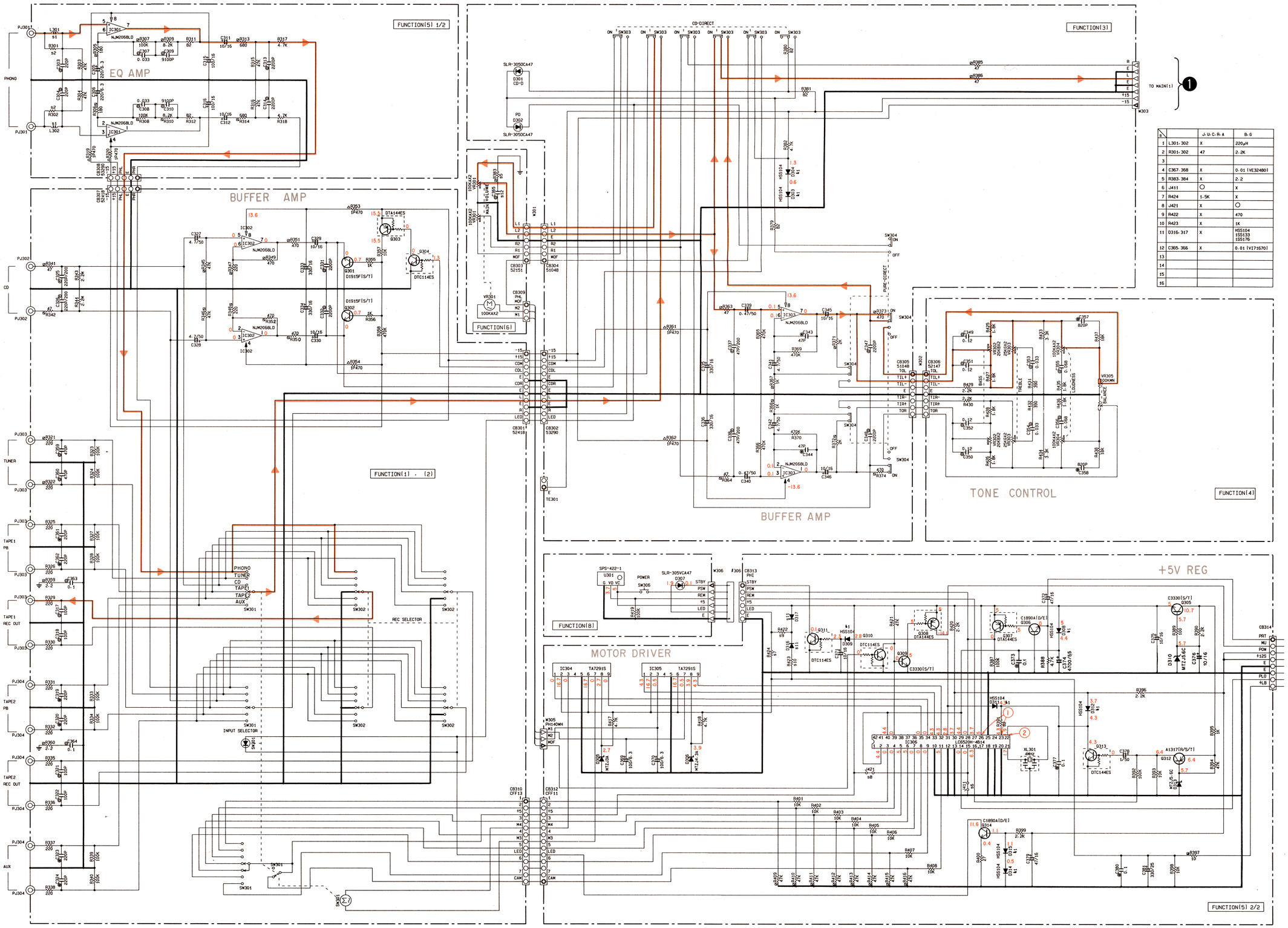
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
▭	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊘	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
◉	CERAMIC TUBULAR CAPACITOR
◎	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
ⓘ	MICA CAPACITOR
ⓟ	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

Interchangeable Parts at Manufacture-Stage

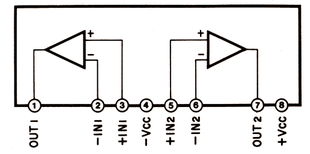
Mark	Reference Parts Number	Parts Name
&1	D303-304-308-309-311-312	HSS104
	314-315	1SS133
		1SS176



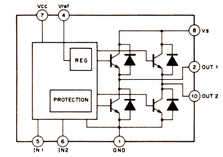
#		J·U·C·R·A	B·G
1	L301·302	X	220μH
2	R301·302	47	2.2K
3			
4	C367·368	X	0.01 (VE32480)
5	R383·384	X	2.2
6	J411	○	X
7	R424	1.5K	X
8	J421	X	○
9	R422	X	470
10	R423	X	1K
11	D316·317	X	HSS104 1SS133 1SS176
12	C365·366	X	0.01 (VI71670)
13			
14			
15			
16			

■ IC BLOCK

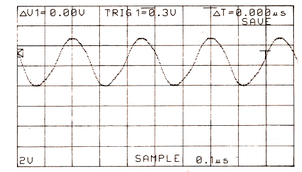
IC301, 302, 303 : NJM2068LD (Dual OP-amp)



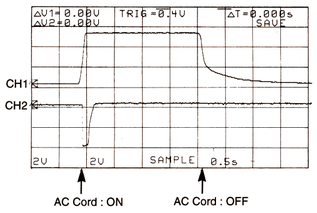
IC304, 305 : TA7291S (Motor Driver)



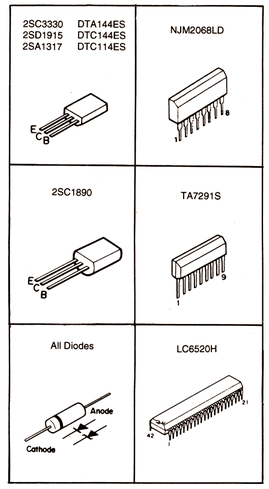
Point ① (Pin 22 of IC 306)
V : 2V/div H : 0.1μsec/div
DC range 1 : 1 probe



Point ②
(CH1 : Pin 26 of IC 306)
(CH2 : Pin 23 of IC 306)
V : 2V/div H : 0.5sec/div
DC range 1 : 1 probe



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.



- *All voltages are measured with a 10MΩ/V DC electnc volt meter.*
- *Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.*
- *Schematic diagram is subject to change without notice.*

■ SCHEMATIC DIAGRAM (Main) AX-490

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	‡‡
⊘	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	‡
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
◇	POLYSTYRENE FILM CAPACITOR	
ⓘ	MICA CAPACITOR	
ⓟ	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
◪	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

NOTICE
(J)····· Japanese model
(U)····· U.S.A model
(C)····· Canadian model
(A)····· Australian model
(G)····· European model
(B)····· British model
(R)····· General model
(P)····· RP model

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&1	D101-107.110.112.114 115.123.126.142	HSS104 1SS133 1SS176
&2	D116-119.125	1SR139-100T32 11ES4-TA1
&3		
&4		
&5		

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SA893A
2SA970GR
2SA1015Y
2SA1145
2SC1815Y
2SC1890A
2SC2240

2SD1915F
DTA123ES
DTC124ES
2SC3330

2SA1708 (S, T)

2SC2705 (O, Y)

2SA1492 (O, P, Y)
2SC3856 (O, P, Y)

2SA1358
2SC3421

All Diodes

S4VB20

		J	U·C	R	A·B	G
1	C119-124 162.163	X	X	X	0.01	0.01
2	R117.118	330	330	330	680	680
3	C170	X	X	X	1000P	1000P
4	C107.108	100/25	100/6.3	100/6.3	100/25	100/25
5	F101	6A125V	6A125V	6A125V	T1.6A250V	T1.6A250V
6	F102	X	X	X	X	T2.5A250V
7	F103	X	X	T1.6A250V	X	X
8	T101	XC542	XC083	XC082	XC084	XC084
9						
10	R234	X	X	47	X	X
11	C149	X	X	100/16	X	X
12	Q141	X	X	C4466(O/P/Y)	X	X
13	Q142	X	X	C1815(Y)	X	X
14	D124	X	X	MT2J16A	X	X
15	R183	X	X	18K	X	X
16	C151	330/25	330/25	330/63	330/25	330/25
17	JK103	VI32750	V132750	V132750	X	VP72860
18	SW104	X	X	VA96180	X	X
19	CB125.126	X	X	VP20650	X	X
20	TE101	VC31370	VC31370	VC31370	VK50620	VK50620
21	CB123.124	X	X	X	X	VP20650
22	C164.165	X	X	X	100P	100P
23	J291	○	○	X	○	○
24	R214.215	X	X	X	4.7	4.7
25						
26	J301	○	○	○	○	X
27	JK102	X	VJ72680	VJ72680	VJ72680	VJ72680
28	Q139	X	A170B(S/T)	A170B(S/T)	A170B(S/T)	A170B(S/T)
29	Q138	X	DTC124ES	DTC124ES	DTC124ES	DTC124ES
30	R179	X	2.2K	2.2K	2.2K	2.2K
31	R180	X	10K	10K	10K	10K
32	C150	X	X	10/16	X	X
33	W108-111 113.114	X	X	○	X	X
34	W115.116	X	X	X	○	X

- *All voltages are measured with a 10MΩ/V DC electric volt meter.*
- *Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.*
- *Schematic diagram is subject to change without notice.*

PARTS LIST

■ ELECTRICAL PARTS

■ **WARNING**
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP
C.CE	: CERAMIC CAP
C.CE.ARRAY	: CERAMIC CAP ARRAY
C.CE.CHP	: CHIP CERAMIC CAP
C.CE.ML	: MULTILAYER CERAMIC CAP
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP
C.CE.TUBLR	: CERAMIC TUBULAR CAP
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP
C.EL	: ELECTROLYTIC CAP
C.MICA	: MICA CAP
C.ML.FLM	: MULTILAYER FILM CAP
C.MP	: METALLIZED PAPER CAP
C.MYLAR	: MYLAR FILM CAP
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP
C.PAPER	: PAPER CAPACITOR
C.PLS	: POLYSTYRENE FILM CAP
C.POL	: POLYESTER FILM CAP
C.POLY	: POLYETHYLENE FILM CAP
C.PP	: POLYPROPYLENE FILM CAP
C.TNTL	: TANTALUM CAP
C.TNTL.CHP	: CHIP TANTALUM CAP
C.TRIM	: TRIMMER CAP
CN	: CONNECTOR
CN.BS.PIN	: CONNECTOR, BASE PIN
CN.CANNON	: CONNECTOR, CANNON
CN.DIN	: CONNECTOR, DIN
CN.FLAT	: CONNECTOR, FLAT CABLE
CN.POST	: CONNECTOR, BASE POST
COIL.MX.AM	: COIL, AM MIX
COIL.AT.FM	: COIL, FM ANTENNA
COIL.DT.FM	: COIL, FM DETECT
COIL.MX.FM	: COIL, FM MIX
COIL.OUTPT	: OUTPUT COIL
DIOD.ARRAY	: DIODE ARRAY
DIODE.BRG	: DIODE BRIDGE
DIODE.CHP	: CHIP DIODE
DIODE.VAR	: VARACTOR DIODE
DIOD.Z.CHP	: CHIP ZENER DIODE
DIODE.ZENR	: ZENER DIODE
DSCR.CE	: CERAMIC DISCRIMINATOR
FER.BEAD	: FERRITE BEADS
FER.CORE	: FERRITE CORE
FET.CHP	: CHIP FET
FL.DSPLY	: FLUORESCENT DISPLAY
FLTR.CE	: CERAMIC FILTER
FLTR.COMB	: COMB FILTER MODULE
FLTR.LC.RF	: LC FILTER ,EMI
GND.MTL	: GROUND PLATE
GND.TERM	: GROUND TERMINAL
HOLDER.FUS	: FUSE HOLDER
IC.PRTCT	: IC PROTECTOR
JUMPER.CN	: JUMPER CONNECTOR
JUMPER.TST	: JUMPER, TEST POINT
L.DTCT	: LIGHT DETECTING MODULE
L.EMIT	: LIGHT EMITTING MODULE
LED.DSPLY	: LED DISPLAY
LED.INFRD	: LED, INFRARED
MODUL.RF	: MODULATOR, RF
PHOT.CPL	: PHOTO COUPLER
PHOT.INTR	: PHOTO INTERRUPTER
PHOT.RFLCT	: PHOTO REFLECTOR
PIN.TEST	: PIN, TEST POINT
PLST.RIVET	: PLASTIC RIVET
R.ARRAY	: RESISTOR ARRAY
R.CAR	: CARBON RESISTOR
R.CAR.CHP	: CHIP RESISTOR
R.CAR.FP	: FLAME PROOF CARBON RESISTOR
R.FUS	: FUSABLE RESISTOR
R.MTL.CHP	: CHIP METAL FILM RESISTOR
R.MTL.FLM	: METAL FILM RESISTOR
R.MTL.OXD	: METAL OXIDE FILM RESISTOR
R.MTL.PLAT	: METAL PLATE RESISTOR
RSNR.CE	: CERAMIC RESONATOR
RSNR.CRYS	: CRYSTAL RESONATOR
R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
R.WW	: WIRE WOUND RESISTOR
SCR.BND.HD	: BIND HEAD B-TITE SCREW
SCR.BW.HD	: BW HEAD TAPPING SCREW
SCR.CUP	: CUP TITE SCREW
SCR.TERM	: SCREW TERMINAL
SCR.TR	: SCREW, TRANSISTOR
SUPRT.PCB	: SUPPORT, P.C.B.
SURG.PRTCT	: SURGE PROTECTOR
SW.TACT	: TACT SWITCH
SW.LEAF	: LEAF SWITCH
SW.LEVER	: LEVER SWITCH
SW.MICRO	: MICRO SWITCH
SW.PUSH	: PUSH SWITCH
SW.RT.ENC	: ROTARY ENCODER
SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
SW.RT	: ROTARY SWITCH
SW.SLIDE	: SLIDE SWITCH
TERM.SP	: SPEAKER TERMINAL
TERM.WRAP	: WRAPPING TERMINAL
THRMST.CHP	: CHIP THERMISTOR
TR.CHP	: CHIP TRANSISTOR
TR.DGT	: DIGITAL TRANSISTOR
TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
TRANS	: TRANSFORMER
TRANS.PULS	: PULSE TRANSFORMER
TRANS.PWR	: POWER TRANSFORMER ASS'y
TUNER.AM	: TUNER PACK, AM
TUNER.FM	: TUNER PACK, FM
TUNER.PK	: FRONT-END TUNER PACK
VR	: ROTARY POTENTIOMETER
VR.MTR	: POTENTIOMETER WITH MOTOR
VR.SW	: POTENTIOMETER WITH ROTARY SW
VR.SLIDE	: SLIDE POTENTIOMETER
VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

MAIN P.C.B.

	Schm Ref.	PART NO.	Description		
*		VS976900	P.C.B.	MAIN(UC)	
*		VS977000	P.C.B.	MAIN(R)	
*		VS977100	P.C.B.	MAIN(AB)	
*		VS977200	P.C.B.	MAIN(G)	
	CB101	VL845100	CN.BS.PIN	7P	
	CB102	VD004600	CN.BS.PIN	3P	
*	CB108	VS839400	CN.BS.PIN	4P	
	CB109	VS839500	CN	4P	
	CB110	VG879900	CN.BS.PIN	2P	
	CB121	VP206500	HOLDER.FUS	EYF-52BC	
	CB122	VP206500	HOLDER.FUS	EYF-52BC	
	CB123	VP206500	HOLDER.FUS	EYF-52BC(G)	
	CB124	VP206500	HOLDER.FUS	EYF-52BC(G)	
	CB125	VP206500	HOLDER.FUS	EYF-52BC(R)	
	CB126	VP206500	HOLDER.FUS	EYF-52BC(R)	
	C101	VT646900	C.EL	4.7uF	25V
	C102	VT646900	C.EL	4.7uF	25V
	C103	VK533800	C.PP	47pF	200V
	C104	VK533800	C.PP	47pF	200V
	C105	VK512600	C.MYLAR	2200pF	50V
	C106	VK512600	C.MYLAR	2200pF	50V
⚠ *	C107	VQ568900	C.EL	100uF	6.3V(UCR)
⚠	C107	VQ569900	C.EL	100uF	25V(ABG)
⚠ *	C108	VQ568900	C.EL	100uF	6.3V(UCR)
⚠	C108	VQ569900	C.EL	100uF	25V(ABG)
	C109	FU351220	C.MICA	22pF	500V(UCR)
	C109	FU451150	C.MICA	15pF	500V(ABG)
	C110	FU351220	C.MICA	22pF	500V(UCR)
	C110	FU451150	C.MICA	15pF	500V(ABG)
	C111	VK533900	C.PP	100pF	200V
	C112	VK533900	C.PP	100pF	200V
	C113	VK533900	C.PP	100pF	200V
	C114	VK533900	C.PP	100pF	200V
⚠	C115	VG291200	C.EL	47uF	50V
	C116	VG291200	C.EL	47uF	50V
	C117	VK534200	C.PP	0.022uF	100V
	C118	VK534200	C.PP	0.022uF	100V
	C119	Vi716700	C.MYLAR	0.01uF	50V(ABG)
	C120	Vi716700	C.MYLAR	0.01uF	50V(ABG)
	C121	Vi716700	C.MYLAR	0.01uF	50V(ABG)
	C122	Vi716700	C.MYLAR	0.01uF	50V(ABG)
	C123	VK534100	C.PP	0.01uF	100V(ABG)
	C124	VK534100	C.PP	0.01uF	100V(ABG)
	C125	VG290600	C.EL	2.2uF	50V
	C126	UJ895220	C.EL	0.22uF	100V
	C127	VN283200	C.EL	1uF	50V
	C128	VK534000	C.PP	220pF	200V(ABG)
	C128	VL872800	C.PP	1000pF	100V(UCR)
	C129	VG288900	C.EL	100uF	25V
	C131	VK699400	C.EL	330uF	63V
	C136	VF760000	C.EL	100uF	10V
⚠	C137	VF760000	C.EL	100uF	10V
⚠	C138	VG290500	C.EL	1uF	50V

	Schm Ref.	PART NO.	Description		
	C139	VG289100	C.EL	330uF	25V
	C140	VG289100	C.EL	330uF	25V
	C141	VK574400	C.EL	8200uF	63V
	C142	VK574400	C.EL	8200uF	63V
*	C143	VR325400	C.MYLAR	0.1uF	100V
*	C144	VR325400	C.MYLAR	0.1uF	100V
	C149	VG288900	C.EL	100uF	25V(R)
	C150	VG290900	C.EL	10uF	50V(R)
	C151	VG289100	C.EL	330uF	25V(UCABG)
	C151	VK699400	C.EL	330uF	63V(R)
⚠ *	C157	VS741700	C.CE.SAFTY	0.01uF	275V
	C159	VE324800	C.MYLAR.ML	0.01uF	50V
	C162	Vi716700	C.MYLAR	0.01uF	50V(ABG)
	C163	Vi716700	C.MYLAR	0.01uF	50V(ABG)
	C164	VK533900	C.PP	100pF	200V(ABG)
	C165	VK533900	C.PP	100pF	200V(ABG)
	C168	VE326000	C.MYLAR.ML	0.1uF	50V
	C169	VE326000	C.MYLAR.ML	0.1uF	50V
	C170	FG213100	C.CE	1000pF	50V(ABG)
*	C172	UA253100	C.MYLAR	1000pF	50V
	C180	VF964800	C.EL	100uF	16V
	C181	VF964800	C.EL	100uF	16V
	C182	VK399200	C.MYLAR.ML	0.39uF	50V
	C183	VK399200	C.MYLAR.ML	0.39uF	50V
	C199	FG214100	C.CE	0.01uF	50V
	C202	VE326000	C.MYLAR.ML	0.1uF	50V
	C203	VE326000	C.MYLAR.ML	0.1uF	50V
	C205	VF964800	C.EL	100uF	16V
	D101	VD631600	DIODE	1SS133,176,HSS104	
	D102	VD631600	DIODE	1SS133,176,HSS104	
	D103	VD631600	DIODE	1SS133,176,HSS104	
	D104	VD631600	DIODE	1SS133,176,HSS104	
	D105	VD631600	DIODE	1SS133,176,HSS104	
	D106	VD631600	DIODE	1SS133,176,HSS104	
	D107	VD631600	DIODE	1SS133,176,HSS104	
	D110	VD631600	DIODE	1SS133,176,HSS104	
	D112	VD631600	DIODE	1SS133,176,HSS104	
	D113	VN008700	DIODE	1SS270A	
	D114	VD631600	DIODE	1SS133,176,HSS104	
	D115	VD631600	DIODE	1SS133,176,HSS104	
⚠	D116	VH770800	DIODE	1SR139-100	
⚠	D117	VH770800	DIODE	1SR139-100	
⚠	D118	VH770800	DIODE	1SR139-100	
⚠	D119	VH770800	DIODE	1SR139-100	
⚠	D120	iH001090	DIODE.BRG	S4VB20	2.6A 200V
	D123	VD631600	DIODE	1SS133,176,HSS104	
	D124	VG440300	DIODE.ZENR	MTZJ12C	12V(R)
	D125	VH770800	DIODE	1SR139-100	
	D126	VD631600	DIODE	1SS133,176,HSS104	
	D133	VN008700	DIODE	1SS270A	
	D134	VN008700	DIODE	1SS270A	
	D140	VG438800	DIODE.ZENR	MTZJ8.2A	8.2V
	D141	VG441000	DIODE.ZENR	MTZJ16A	16V

* New Parts

MAIN P.C.B.

	Schm Ref.	PART NO.	Description	
	D142	VD631600	DIODE	1SS133,176,HSS104
	D143	VG436700	DIODE.ZENR	MTZJ4.3A 4.3V
	D149	VG438800	DIODE.ZENR	MTZJ8.2A 8.2V
	D158	VG441000	DIODE.ZENR	MTZJ16A 16V
⚠	F101	KB001660	FUSE	T1.60A 250V(ABG)
⚠ *	F101	VS823100	FUSE	6.0A 125V(UCR)
⚠	F102	KB002980	FUSE	T2.5A 250V(G)
⚠	F103	KB001660	FUSE	T1.60A 250V(R)
⚠	FR101	VK188200	R.FUS	220Ω 1/4W
⚠	FR102	VK188200	R.FUS	220Ω 1/4W
	JK102	VJ726800	JACK.MNI	(G)
⚠	JK103	Vi327500	OUTLET.AC	3P(UCR)
⚠	JK103	VP728600	OUTLET.AC	3P(G)
*	L101	VP575600	COIL	1.5uH
*	L102	VP575600	COIL	1.5uH
	Q101	VK432900	TR	2SD1915F S,T
⚠	Q102	VK432900	TR	2SD1915F S,T
	Q103	iA097000	TR	2SA970 GR,BL
⚠	Q104	iA097000	TR	2SA970 GR,BL
⚠	Q105	iA097000	TR	2SA970 GR,BL
⚠	Q106	iA097000	TR	2SA970 GR,BL
⚠	Q107	iC1815C0	TR	2SC1815 Y
⚠	Q108	iC1815C0	TR	2SC1815 Y
⚠	Q109	iC1815C0	TR	2SC1815 Y
⚠	Q110	iC1815C0	TR	2SC1815 Y
⚠	Q111	VE198700	TR	2SA1145 O,Y
⚠	Q112	VE198700	TR	2SA1145 O,Y
⚠	Q113	iA101521	TR	2SA1015 Y
⚠	Q114	iA101521	TR	2SA1015 Y
⚠	Q115	VE198800	TR	2SC2705 O,Y
⚠	Q116	VE198800	TR	2SC2705 O,Y
⚠	Q117	VC218900	TR	2SC3330 R,S,T
⚠	Q118	VC218900	TR	2SC3330 R,S,T
⚠	Q119B	iX603580	TR	2SA1358
⚠	Q119A	iX603590	TR	2SC3421
⚠	Q120B	iX603580	TR	2SA1358
⚠	Q120A	iX603580	TR	2SC3421
⚠ #	Q123B	iX606460	TR	2SA1492 O,P,Y
⚠ #	Q123A	iX606470	TR	2SC3856 O,P,Y
⚠ #	Q124B	iX606460	TR	2SA1492 O,P,Y
⚠ #	Q124A	iX606470	TR	2SC3856 O,P,Y
*	Q127	VP883100	TR	2SC1890A D,E
*	Q128	VP883100	TR	2SC1890A D,E
*	Q129	VP883000	TR	2SA893A D,E
	Q132	iC1815C0	TR	2SC1815 Y
	Q133	VK432900	TR	2SD1915F S,T
*	Q134	VP883100	TR	2SC1890A D,E
	Q135	VF325300	TR.DGT	DTA123ESTP
	Q136	VF325300	TR.DGT	DTA123ESTP
	Q137	VF325300	TR.DGT	DTA123ESTP
	Q138	VF331200	TR.DGT	DTC124ES(G)
*	Q139	VP872600	TR	2SA1708 S,T(G)
	Q140	iC224030	TR	2SC2240 GR,BL

	Schm Ref.	PART NO.	Description	
	Q141	VP768300	TR	2SC4466 O,P,Y(R)
	Q142	iC1815C0	TR	2SC1815 Y(R)
⚠	R125	HL315100	R.MTL.OXD	100Ω 1W
⚠	R126	HL315100	R.MTL.OXD	100Ω 1W
⚠	R127	HL315100	R.MTL.OXD	100Ω 1W
⚠	R128	HL315100	R.MTL.OXD	100Ω 1W
⚠	R129	HV456270	R.CAR.FP	2.7KΩ 1/4W
⚠	R130	HV456270	R.CAR.FP	2.7KΩ 1/4W
⚠	R131	HV456100	R.CAR.FP	1KΩ 1/4W
⚠	R132	HV456100	R.CAR.FP	1KΩ 1/4W
⚠ *	R135	HZ003780	R.MTL.PLAT	0.22Ω+0.22 5W
⚠ *	R136	HZ003780	R.MTL.PLAT	0.22Ω+0.22 5W
⚠	R143	HL314100	R.MTL.OXD	10Ω 1W
⚠	R144	HL314100	R.MTL.OXD	10Ω 1W
⚠	R145	HL314100	R.MTL.OXD	10Ω 1W
⚠	R146	HL314100	R.MTL.OXD	10Ω 1W
	R150	VP941800	R.MTL.OXD	10KΩ 1W
⚠	R152	HL314470	R.MTL.OXD	47Ω 1W
	R154	HL315470	R.MTL.OXD	470Ω 1W
⚠	R167	HL315470	R.MTL.OXD	470Ω 1W
⚠	R168	HL315470	R.MTL.OXD	470Ω 1W
	R171	HV453100	R.CAR.FP	1Ω 1/4W
⚠	R172	HV453100	R.CAR.FP	1Ω 1/4W
	R177	HL315680	R.MTL.OXD	680Ω 1W
	R178	HL315680	R.MTL.OXD	680Ω 1W
⚠	R203	VP939700	R.MTL.FLM	4.7Ω 1W
	R204	VP939700	R.MTL.FLM	4.7Ω 1W
⚠	R205	VP939700	R.MTL.FLM	4.7Ω 1W
	R206	VP939700	R.MTL.FLM	4.7Ω 1W
	R214	VP939700	R.MTL.FLM	4.7Ω 1W(ABG)
	R215	VP939700	R.MTL.FLM	4.7Ω 1W(ABG)
⚠	R230	HL325470	R.MTL.OXD	470Ω 2W
⚠	R278	HL325470	R.MTL.OXD	470Ω 2W
⚠	R279	HL326120	R.MTL.OXD	1.2KΩ 2W
⚠	R280	HL315470	R.MTL.OXD	470Ω 1W
	R286	HV455270	R.CAR.FP	270Ω 1/4W
	R287	HV455270	R.CAR.FP	270Ω 1/4W
	R288	HV456100	R.CAR.FP	1KΩ 1/4W
	R289	HV456100	R.CAR.FP	1KΩ 1/4W
⚠	RY101	VK438300	RELAY	DH24D2-0TM-II
⚠	RY102	VK438300	RELAY	DH24D2-0TM-II
	RY103	VT561500	RELAY	DC JW2ASN-DC24V
	RY104	VH230800	RELAY	G5P-1-DC12V
⚠	SW104	VA961800	VOLT.SELCT	ESE-37247-F(R)
⚠	T101	XC082A00	TRANS.PWR	(R)
⚠	T101	XC083A00	TRANS.PWR	(UC)
⚠	T101	XC084A00	TRANS.PWR	(ABG)
	TE101	VC313700	TERM.SP	8P(UCR)
	TE101	VK506200	TERM.SP	8P(ABG)
		VJ828000	PIN	IMSA-6024-03E
		BB071360	SCR.TERM	8.3x13
		BB070700	GND.MTL	

* New Parts

FUNCTION P.C.B.

	Schm Ref.	PART NO.	Description		
*		VS976600	P.C.B.	FUNCTION(JUCRA)	
*		VS976700	P.C.B.	FUNCTION(BG)	
*	CB301	VQ961400	CN.BS.PIN	11P	
*	CB302	VQ963200	CN.BS.PIN	11P	
	CB303	VK026500	CN.BS.PIN	6P	
	CB304	Vi878400	CN.BS.PIN	6P	
	CB305	Vi878500	CN.BS.PIN	7P	
	CB306	VK025100	CN.BS.PIN	7P	
*	CB307	VQ960800	CN.BS.PIN	5P	
*	CB308	VQ962600	CN.BS.PIN	5P	
	CB309	VB858200	CN.BS.PIN	3P	
*	CB310	VR362000	CN.BS.PIN	13P	
	CB311	VD004600	CN.BS.PIN	3P	
*	CB312	VR358400	CN.BS.PIN	13P	
	CB313	VD004900	CN.BS.PIN	6P	
	C303	VQ462600	C.MYLAR	220pF	50V
	C304	VQ462600	C.MYLAR	220pF	50V
	C305	VG286900	C.EL	220uF	10V
	C306	VG286900	C.EL	220uF	10V
	C307	UA254330	C.MYLAR	0.033uF	50V
	C308	UA254330	C.MYLAR	0.033uF	50V
	C309	UA653910	C.MYLAR	9100pF	50V
	C310	UA653910	C.MYLAR	9100pF	50V
	C311	VG290900	C.EL	10uF	50V
	C312	VG290900	C.EL	10uF	50V
	C313	UA653470	C.MYLAR	4700pF	50V
	C314	UA653470	C.MYLAR	4700pF	50V
	C315	VG288900	C.EL	100uF	25V
	C316	VG288900	C.EL	100uF	25V
	C317	UA652100	C.MYLAR	100pF	50V
	C318	UA652100	C.MYLAR	100pF	50V
	C319	VG278400	C.CE.TUBLR	220pF	50V
	C320	VG278400	C.CE.TUBLR	220pF	50V
	C321	UA652100	C.MYLAR	100pF	50V
	C322	UA652100	C.MYLAR	100pF	50V
	C323	VG278400	C.CE.TUBLR	220pF	50V
	C324	VG278400	C.CE.TUBLR	220pF	50V
	C325	VK984200	C.MYLAR	220pF	50V
	C326	VK984200	C.MYLAR	220pF	50V
	C327	VT646900	C.EL	4.7uF	25V
	C328	VT646900	C.EL	4.7uF	25V
	C329	VT646800	C.EL	10uF	16V
	C330	VT646800	C.EL	10uF	16V
	C331	Vi715900	C.MYLAR	2200pF	50V
	C332	Vi715900	C.MYLAR	2200pF	50V
	C333	VG287800	C.EL	330uF	16V
	C334	VG287800	C.EL	330uF	16V
	C335	VG287800	C.EL	330uF	16V
	C336	VG287800	C.EL	330uF	16V
	C337	VK533800	C.PP	47pF	200V
	C338	VK533800	C.PP	47pF	200V
	C339	VG290300	C.EL	0.47uF	50V
	C340	VG290300	C.EL	0.47uF	50V

	Schm Ref.	PART NO.	Description		
	C341	VE021900	C.EL	4.7uF	100V
	C342	VE021900	C.EL	4.7uF	100V
	C343	VF466700	C.CE.TUBLR	47pF	50V
	C344	VF466700	C.CE.TUBLR	47pF	50V
	C345	VQ082700	C.EL	10uF	16V
	C346	VQ082700	C.EL	10uF	16V
	C347	Vi715900	C.MYLAR	2200pF	50V
	C348	Vi715900	C.MYLAR	2200pF	50V
*	C349	UA655120	C.MYLAR	0.12uF	50V
*	C350	UA655120	C.MYLAR	0.12uF	50V
*	C351	UA655120	C.MYLAR	0.12uF	50V
*	C352	UA655120	C.MYLAR	0.12uF	50V
	C353	UA254330	C.MYLAR	0.033uF	50V
	C354	UA254330	C.MYLAR	0.033uF	50V
*	C355	VS214100	C.MYLAR	0.068uF	50V
*	C356	VS214100	C.MYLAR	0.068uF	50V
	C357	VG279000	C.CE.TUBLR	820pF	50V
	C358	VG279000	C.CE.TUBLR	820pF	50V
	C359	VQ462600	C.MYLAR	220pF	50V
	C360	VQ462600	C.MYLAR	220pF	50V
	C361	VG278400	C.CE.TUBLR	220pF	50V
	C362	VG278400	C.CE.TUBLR	220pF	50V
	C363	VE326000	C.MYLAR.ML	0.1uF	50V
	C364	VE326000	C.MYLAR.ML	0.1uF	50V
	C365	Vi716700	C.MYLAR	0.01uF	50V(BG)
	C366	Vi716700	C.MYLAR	0.01uF	50V(BG)
	C367	VE324800	C.MYLAR.ML	0.01uF	50V(BG)
	C368	VE324800	C.MYLAR.ML	0.01uF	50V(BG)
	C369	VF760000	C.EL	100uF	10V
	C370	VF760000	C.EL	100uF	10V
	C371	VG290900	C.EL	10uF	50V
	C372	VG291200	C.EL	47uF	50V
	C373	VH053100	C.CE.TUBLR	0.1uF	50V
	C374	VF992600	C.EL	4700uF	5.5V
	C375	VG290900	C.EL	10uF	50V
	C376	VG290900	C.EL	10uF	50V
	C377	VH053100	C.CE.TUBLR	0.1uF	50V
	C378	VG290500	C.EL	1uF	50V
	C379	VG291200	C.EL	47uF	50V
	C380	VH053100	C.CE.TUBLR	0.1uF	50V
	C381	VG289100	C.EL	330uF	25V
	D301	VP593800	LED(or)	SLR-305DCA47	
	D302	VP593800	LED(or)	SLR-305DCA47	
	D303	VD631600	DIODE	1SS133,176,HSS104	
	D304	VD631600	DIODE	1SS133,176,HSS104	
	D305	VG435800	DIODE.ZENR	MTZJ3.0A 3.0V	
	D306	VG436700	DIODE.ZENR	MTZJ4.3A 4.3V	
	D307	VP594000	LED(re)	SLR-305VCA47	
	D308	VD631600	DIODE	1SS133,176,HSS104	
	D309	VD631600	DIODE	1SS133,176,HSS104	
	D310	VG437800	DIODE.ZENR	MTZJ5.6C 5.6V	
	D311	VD631600	DIODE	1SS133,176,HSS104	
	D312	VD631600	DIODE	1SS133,176,HSS104	

* New Parts

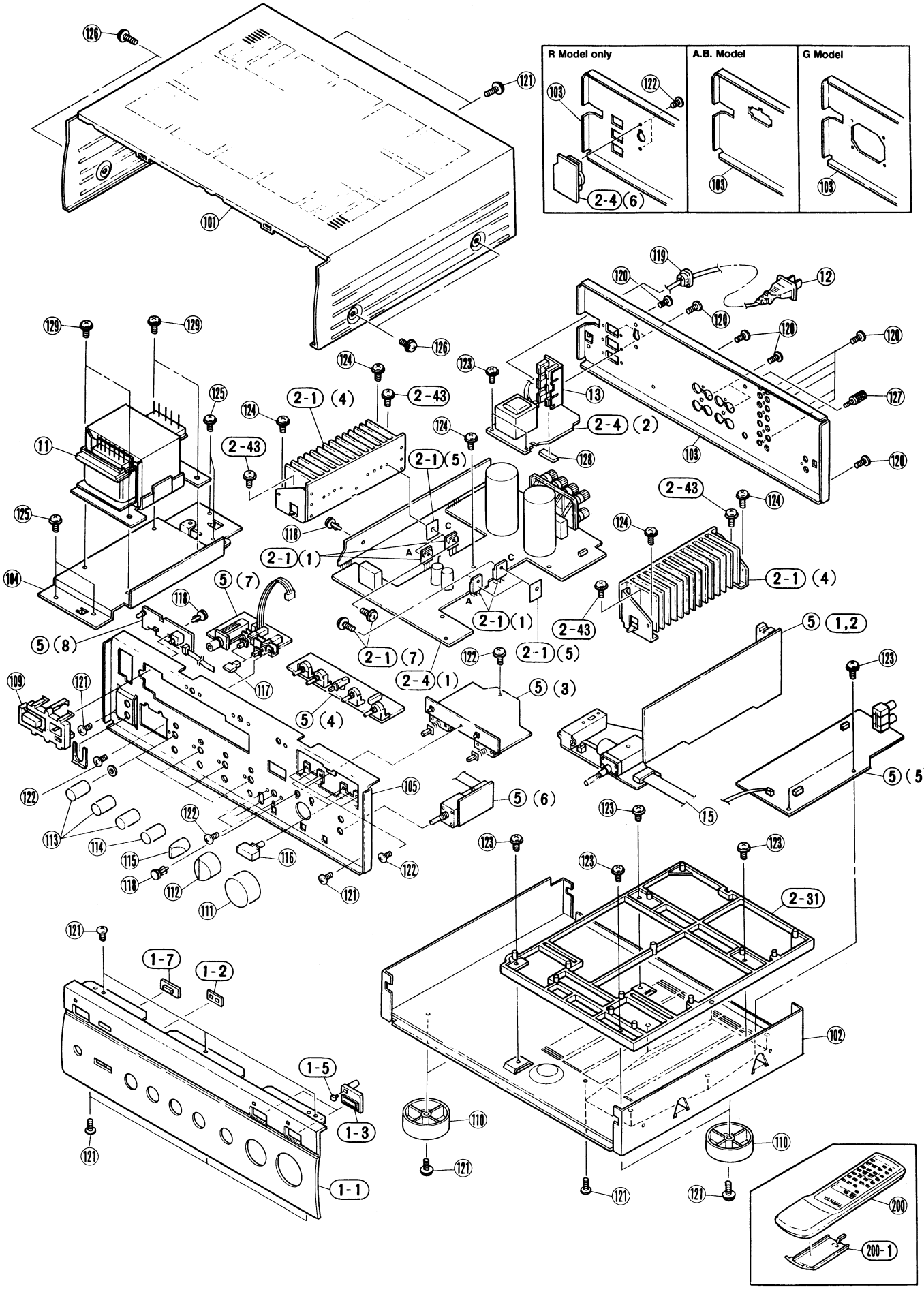
FUNCTION P.C.B.

Schm Ref.	PART NO.	Description	
D313	VG437800	DIODE.ZENR	MTZJ5.6C 5.6V
D314	VD631600	DIODE	1SS133,176,HSS104
D315	VD631600	DIODE	1SS133,176,HSS104
D316	VD631600	DIODE	1SS133,176,(BG)
D317	VD631600	DIODE	1SS133,176,(BG)
IC301	XM356A00	IC	NJM2068LD
IC302	XM356A00	IC	NJM2068LD
IC303	XM356A00	IC	NJM2068LD
IC304	XF557A00	IC	TA7291S
IC305	XF557A00	IC	TA7291S
IC306	XM088B00	IC	LC6520H-4B14
* JK301	VS899700	JACK.PHONE	JY-6317-02-030
L301	VB056900	COIL	220uH(BG)
L302	VB056900	COIL	220uH(BG)
* PJ301	VR765100	JACK.PIN	2P
* PJ302	VR765100	JACK.PIN	2P
PJ303	VJ794600	JACK.PIN	6P
PJ304	VJ794600	JACK.PIN	6P
Q301	VK432900	TR	2SD1915F S,T
Q302	VK432900	TR	2SD1915F S,T
Q303	VG721700	TR.DGT	DTA144ES
Q304	VD678700	TR.DGT	DTC114ES
Q305	VC218900	TR	2SC3330 R,S,T
* Q306	VP883100	TR	2SC1890A D,E
Q307	VG721700	TR.DGT	DTA144ES
Q308	VG721700	TR.DGT	DTA144ES
Q309	VC218900	TR	2SC3330 R,S,T
Q310	VD678700	TR.DGT	DTC114ES
Q311	VD678700	TR.DGT	DTC114ES
Q312	VC218700	TR	2SA1317 R,S,T
Q313	VG722000	TR.DGT	DTC144ES
* Q314	VP883100	TR	2SC1890A D,E
R319	HL315470	R.MTL.OXD	470Ω 1W
R320	HL315470	R.MTL.OXD	470Ω 1W
R353	HL315100	R.MTL.OXD	100Ω 1W
R354	HL315100	R.MTL.OXD	100Ω 1W
R361	HL315470	R.MTL.OXD	470Ω 1W
R362	HL315470	R.MTL.OXD	470Ω 1W
R397	HV454100	R.CAR.FP	10Ω 1/4W
SW301	VT146000	SW.RT	SRBAA46
* SW302	VT021100	SW.RT	RS003-A046BHN20F13
* SW303	VP870800	SW.PUSH	SPUL12
* SW304	VP870800	SW.PUSH	SPUL12
SW305	VJ850200	SW.PUSH	PSE021A2KP 2
SW306	VG392900	SW.TACT	SKHVAA
TE301	LA002110	TERM.WRAP	2P
* U301	VR860700	L.DTCT	SPS-422-1
VR301	VR710500	VR.MTR	A100KΩ
* VR302	VP741800	VR	B20KΩ
* VR303	VP741900	VR	G25KΩ
* VR304	VP700700	VR	A100KΩ
* VR305	VP742000	VR	MN50KΩ
XL301	VB759100	RSNR.CE	4MHz

Schm Ref.	PART NO.	Description	
	VJ828000	PIN	IMSA-6024-03E
	BB071360	SCR.TERM	8.3x13
	BB069510	GND.MTL	No.6951

* New Parts

■ EXPLODED VIEW AX-490



■ MECHANICAL PARTS Note) ø : Diameter

AX-490

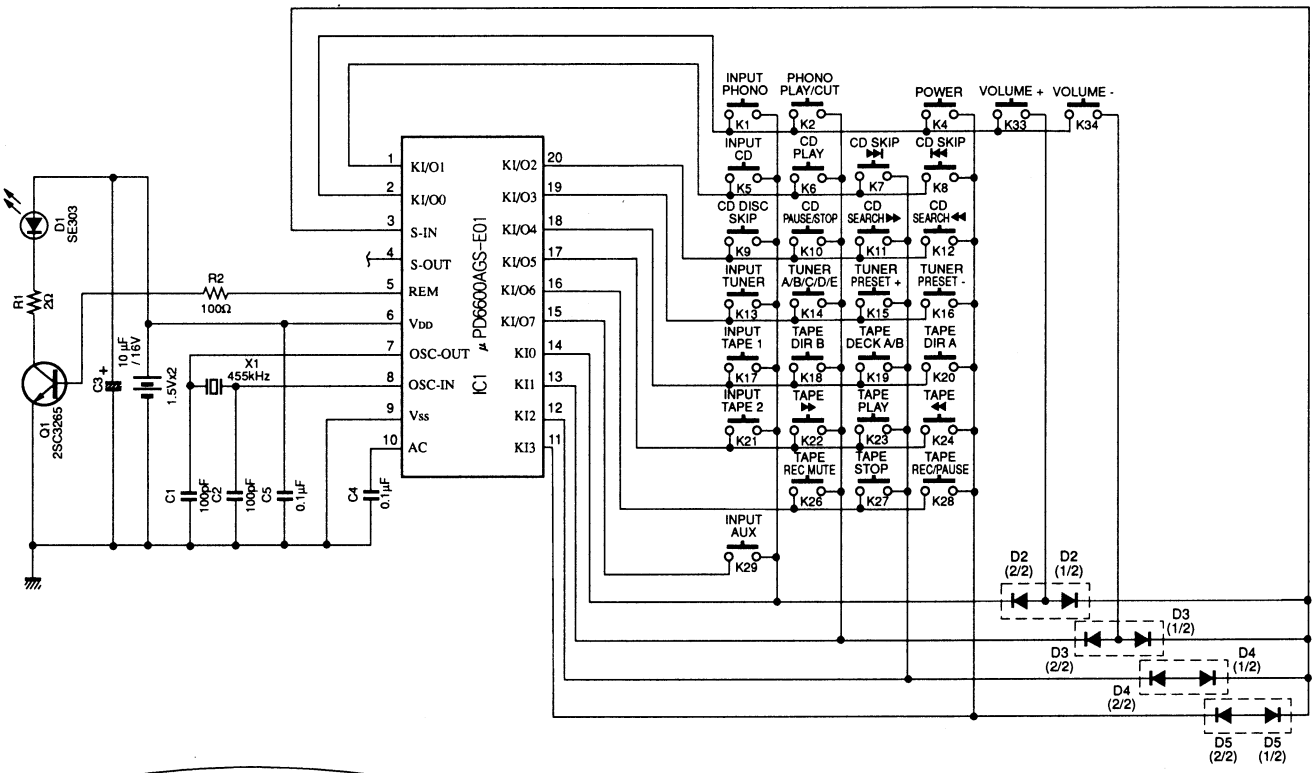
	Ref. No.	PART NO.	Description	Remarks	Markets
*	1- 1	VS587600	FRONT PANEL	BL	
*	1- 1	VS587700	FRONT PANEL	TI	
*	1- 2	VQ793400	BUTTON GUIDE	BL	
*	1- 2	VQ793500	BUTTON GUIDE	TI	
	1- 3	VH816700	BUTTON GUIDE	10x25	
	1- 3	VH816800	BUTTON GUIDE	10x25	
	1- 5	VH897700	LENS	2.2Lx2.2	
	1- 7	VH897500	LENS		
	2-1-1	iX606460	TRANSISTOR	2SA1492 O,P,Y	Q123B,Q124B
	2-1-1	iX606470	TRANSISTOR	2SC3856 O,P,Y	Q123A,Q124A
*	2-1-4	VP493100	HEAT SINK ASS'Y		
	2-1-5	VK195900	SHEET	19x24	
	2-1-7	VK173200	SCREW, TRANSISTOR	3x15 SP FCM3	
*	2-4	VS976900	P.C.B. ASS'Y	MAIN	(UC)
*	2-4	VS977000	P.C.B. ASS'Y	MAIN	(R)
*	2-4	VS977100	P.C.B. ASS'Y	MAIN	(AB)
*	2-4	VS977200	P.C.B. ASS'Y	MAIN	(G)
*	2-31	VS586500	CHASSIS		
	2-43	VB770200	BW HEAD P-TITE SCREW	3x10-8 FCM3	
*	5	VS976600	P.C.B. ASS'Y	FUNCTION	(UCRAB)
*	5	VS976700	P.C.B. ASS'Y	FUNCTION	(G)
⚠ *	11	XL641A00	POWER TRANSFORMER		(G)
⚠ *	11	XL874A00	POWER TRANSFORMER		(U)
⚠ *	11	XL875A00	POWER TRANSFORMER		(C)
⚠ *	11	XL876A00	POWER TRANSFORMER		(R)
⚠ *	11	XL877A00	POWER TRANSFORMER		(AB)
⚠ *	12	VQ508500	POWER CORD ASS'Y		(R)
⚠ *	12	VQ508600	POWER CORD ASS'Y		(A)
⚠ *	12	VS168300	POWER CORD ASS'Y		(UC)
⚠ *	12	VS168400	POWER CORD ASS'Y		(G)
⚠	12	VS680700	POWER CORD ASS'Y		(B)
	13	VJ775000	AC OUTLET	2P	(B)
	13	VP418700	AC OUTLET	2P	(A)
	15	VT016100	CONNECTOR, FLAT CABLE	13P 180mm	
*	101	VS001200	TOP COVER	BL	
*	101	VS001300	TOP COVER	TI	
*	102	VS001400	CHASSIS		
*	103	VS587800	REAR PANEL		(U)
*	103	VS588000	REAR PANEL		(C)
*	103	VS588100	REAR PANEL		(R)
*	103	VS588200	REAR PANEL		(AB)
*	103	VS588300	REAR PANEL		(G)
*	104	VS586600	FRAME, PCB		
*	105	VS586400	SUB CHASSIS		
*	109	VS363200	BUTTON, POWER	BL	
*	109	VS363300	BUTTON, POWER	TI	
	110	VQ780300	LEG	D60xH16	
	111	VQ945600	KNOB	D42 TI	
	111	VR021500	KNOB	D42 BL	
	112	VK220100	KNOB	D32 BL	
	112	VK220200	KNOB	D32 TI	
*	113	VS409600	KNOB	D18 BL	
*	113	VS409800	KNOB	D18 TI	
*	114	VS587400	KNOB D18L	D18 BL	
*	114	VS587500	KNOB D18L	D18 TI	

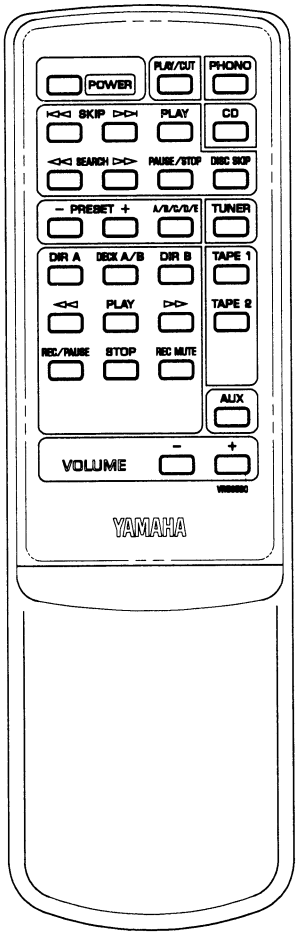
* New Parts

	Ref. No.	PART NO.	Description		Remarks	Markets
*	115	VS587200	KNOB D18/SEL	D18	BL	
*	115	VS587300	KNOB D18/SEL	D18	TI	
	116	VQ780000	BUTTON		BL	
	116	VQ780100	BUTTON		TI	
	117	VQ779000	BUTTON	3x14	BL	
	117	VQ779100	BUTTON	3x14	TI	
*	118	VQ368600	PUSH RIVET	P3555-B		
	119	VN158600	CORD STOPPER	No.2104		
	120	EN301010	BIND HEAD BONDING TAP. SCREW	3x8	FCRM3-BL	
	121	Ei330086	BIND HEAD B-TITE SCREW	3x8	FCRM3-BL	
	122	ED330066	BIND HEAD SCREW	3x6	FCRM3-BL	
	123	EX602240	BW HEAD B-TITE SCREW	3x10	FCRM3-BL	
	124	EL300480	BW HEAD B-TITE SCREW	3x15-8	FCRM3-BL	
	125	EK365020	BW HEAD SCREW	4x6	FCRM3-BL	
	126	EL300470	BW HEAD S-TITE SCREW	4x8-10	FCRM3-BL BL	
	126	EX601150	BW HEAD S-TITE SCREW	4x8-10	FNM3-BL TI	
	127	AA627310	GROUND TERMINAL			
	128	VT386900	SPACER, PCB	T17		(AB)
	129	EL300470	BW HEAD S-TITE SCREW	4x8-10	FCRM3-BL	
			ACCESSORIES			
*	200	VR505900	REMOTE CONTROL TRANSMITTER			
	200-1	CX675300	LID	70x31BLSMK	103RRS-028-01MR	
			BATTERY, MANGANESE	SUM-3,AA,R06		

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM AX-490





Key No.	Function	HEX	
		CUSTOM	DATA
1	INPUT PHONO	7A	14
2	PHONO PLAY/CUT	7A	0E
4	POWER	7A	1F
5	INPUT CD	7A	15
6	CD PLAY	7A	08
7	CD SKIP ▶▶|	7A	0A
8	CD SKIP |◀◀	7A	0B
9	CD DISC SKIP	7A	4F
10	CD PAUSE/STOP	7A	09
11	CD SEARCH ▶▶	7A	0C
12	CD SEARCH ◀◀	7A	0D
13	INPUT TUNER	7A	16
14	TUNER A/B/C/D/E	7A	12
15	TUNER PRESET +	7A	10
16	TUNER PRESET –	7A	11
17	INPUT TAPE 1	7A	18
18	TAPE DIR B	7A	40
19	TAPE DECK A/B	7A	06
20	TAPE DIR A	7A	07
21	INPUT TAPE 2	7A	19
22	TAPE ▶▶	7A	02
23	TAPE PLAY	7A	00
24	TAPE ◀◀	7A	01
26	TAPE REC MUTE	7A	05
27	TAPE STOP	7A	03
28	TAPE REC/PAUSE	7A	04
29	INPUT AUX	7A	17
33	VOLUME +	7A	1A
34	VOLUME –	7A	1B

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910